

Moore

FINAL REPORT

Report of the Ad Hoc Committee
to Consider Replacing the .38 Caliber Revolver with the .40 Caliber Glock Semi-Automatic
for Use by the Harvard University Police Department

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1.0 Background

Paul Johnson, Chief of the Harvard University Police Department, asked Dan Steiner, the University's General Counsel, for permission to change the standard issue of the Harvard University Police Department from the .38 Caliber revolver (which has long been the standard police weapon) to the .40 Caliber Glock semi-automatic which is winning increased favor with police departments throughout the country and in the Boston area. To consider the request, Dan Steiner assembled an Ad Hoc Committee consisting of James Vorenberg, Kristen Forsgard, and Mark Moore. He asked them to review the "relevant factors" in the decision. In his view, these included, among others, the impact on "public safety, the safety of our officers, initial and on-going training, morale, impact on community, expense, and maintenance of weapons." This is the report of that Ad Hoc Committee.

2.0 The Issues

In addressing the question of shifting from the .38 Caliber Smith & Wesson Revolver to the .40 Caliber Glock Semi-Automatic, the Committee judged it important to address both *technical* and *symbolic* issues. The technical issues concern the mechanical differences in the two different weapons, and their implications for the safety, accuracy, reliability, convenience, and utility of the two different weapons. The symbolic issues have to do with the broader messages that are conveyed by the choice of weapon: what that decision says about the community's beliefs about their current environment, what activities and missions it sanctions for its police department, and how it feels about its police officers.

By describing some issues as technical and others as symbolic, the Committee does not mean to diminish the importance of either kind, nor to break the link between the two. In fact, technical features and symbolic meanings are interrelated issues. Both technical and symbolic issues are such important factors that it is important to clearly identify the two issues, and to give them equal status in our report, because the university community is likely to look at the issue in both ways.

The Committee also thinks it is important to review the issues from the perspective of both the university community and the officers of the University Police Department. Generally speaking, those perspectives are not radically different. The university community wants the protection that comes from the HUPD, and is both respectful of their expertise, and sympathetic to their concerns and aspirations. Still, the perspectives are not always identical, and where they are different, it is important to acknowledge the differences.

3.0 Technical Issues: The Weapon and Ammunition

Technically, there *are* important differences between the .38 Caliber revolver and the .40 Caliber semi-automatic. The public discussion of this matter has focused on different aspects of both pistols and ammunition. The key difference is in the operating characteristics of the pistols, not the ammunition. Ammunition can be made to different specifications for each pistol.

3.1 Revolvers and Semi-Automatics

The key difference in the weapons is that one is a revolver and the other a semi-automatic. Both revolvers and semi-automatics fire *single* shots in the same way. The shooter aims the weapon and pulls the trigger. What distinguishes a revolver from a semi-automatic is how they are designed to support *multiple* shots. A revolver supports multiple shots through the use of a six shot cylinder that is rotated mechanically as the shooter pulls the trigger repeatedly. In contrast, a semi-automatic uses some of the gases released by the firing of one bullet to position the cartridge and cock the pistol for the next shot. The shooter must still pull the trigger to fire the next shot, but the amount of pressure he must use is less than was required to produce the first shot. (The difference between a "semi-automatic" and an "automatic" is that an automatic will keep firing as long as the trigger is depressed.) Semi-automatics can be turned into automatics with mechanical adjustments, but the adjustments are not easily made.)

3.11. Accidental Firings

The fact that the semi-automatics are designed to cock themselves (and therefore require less pressure on the second shot than on the first) is sometimes viewed as a characteristic that increases the likelihood of accidental firings. While there have been some reports of accidental discharges, it seems that they are not much more likely to occur with a semi-automatic than with the revolver. The reason is that, in both cases, the shooter still has to pull the trigger to make the gun go off, and the amount of trigger pressure required is not all that different, and can be adjusted by the manufacturer to the user's specification.

In 1992, some controversy arose concerning misfirings by the Glock semi-automatic. However, the cases of accidental firings by the semi-automatic which were cited in the controversy have been subsequently disproved.¹ In the first case the shot fired by the blow to the side of the weapon could not be replicated in several laboratory experiments on new and old weapons. In the second case, a shot was fired spontaneously from a Glock semi-automatic but this came from a weapon that had been illegally modified. Thus, there is no reason at this stage to believe that a semi-automatic is more likely to fire accidentally than revolvers: as firearms they are both dangerous, but equally so.

3.12. Magazine Capacity and Reloading

The difference in design also has an effect on how many bullets the gun can hold before needing to be reloaded, and how easy it is to re-load. In general, semi-automatic pistols can hold more bullets than revolvers: magazines for the semi-automatics hold 8-14 bullets; revolvers hold 6. The semi-automatics can also generally be reloaded more quickly (though some equipment and some training can prepare officers to reload their revolvers very quickly as well).

Because the semi-automatics can shoot more quickly, hold more bullets, and can be re-loaded quickly, they are judged to have more "firepower" than the revolver. Indeed, the perceived difference in "firepower" is one of the most important symbolic issues in shifting

¹One was allegedly caused by a blow to the side of the pistol, and another was apparently a spontaneously fired second shot. See "Information Regarding Glock Semi-Auto Pistols," from the Training Bureau of the Milwaukee Police Department, April 29, 1992, and "Burbank Police Daily Bulletin," Lt. J. Valento, March 5, 1992.

from revolvers to semi-automatics. The enhanced firepower of the semi-automatics make the weapons attractive to police officers who fear finding themselves in a sustained "shoot-out" with offenders who have the semi-automatics while they have only a revolver. Indeed, there has been at least one incident in which a police officer carrying a revolver was killed by an offender carrying a semi-automatic in a shootout simply because the offender had more bullets at his disposal than the officer.²

It is also the enhanced firepower that has concerned others that the shift to the semi-automatic will increase the chance that police shootings will be fatal, and that innocent bystanders might be injured or killed. Whether such effects occur or not, however, has as much to do with how officers use the weapons, as on the weapon itself.

3.13. Accuracy

The design of the weapon also affects its accuracy. At the most technical level, the accuracy of a weapon is most decisively determined by its barrel length. That is why rifles are more accurate than pistols, and longer barrelled pistols more accurate than derringers. Because the .38 revolver and the .40 semi-automatic have approximately the same barrel length, they are technically about equally accurate.³ Or, one could say they are equally inaccurate, for pistols in general are quite inaccurate weapons at anything other than very short range.

²"Memory of a Fallen Officer Will Not Fade," *New York Times*, May 31, 1992.

³The HUPD standard issue .38 revolver is a Smith & Wesson Model 64 with a barrel length of 4 inches. The Glock Model 22 Semi-automatic has a slightly longer barrel of 4.49 inches, which gives negligible technical advantage in terms of accuracy.

At a less technical level, the accuracy of a pistol is determined not by barrel length, but how they are aimed and fired by humans. Once in the hands of officers, the semi-automatic seems to have an advantage over the revolvers. The reasons are essentially two. First, the semi-automatics are lighter (23 ounces versus 33.5 ounces), therefore easier to point and hold steady. Second, some of the recoil of the first shot is taken up in cocking the weapon, and that reduces the strain on the shooters hand and arm, increasing the accuracy of the second shot. This leads many experts to believe that average, long term accuracy will be higher for the semi-automatic than the revolver.

3.14. Maintenance and Reliability

The design of the weapon also affects the amount of maintenance they require, and their vulnerability to jamming and other kinds of failure. Initially, it might appear that the revolver would be the more robust weapon because its mechanism is mechanical and relatively simple. In fact, it seems that the semi-automatics have the edge here as well.

A revolver works very well most of the time. But, in order to keep it working well, a reasonably high degree of maintenance is required. Furthermore, when for some reason it stops working, it is more difficult to repair than the Glock semi-automatic -- both on the scene, and even later in the workshop, because it often needs specialized parts.

In contrast, a semi-automatic is vulnerable to a number of "routine" malfunctions associated with the re-loading action of the weapon such as: 1) failure to feed a round into the chamber; 2) failure of the slide to close completely; and 3) trapped shell cases that prevent the slide from closing. Yet, these problems can nearly always be remedied very quickly and

easily, even under "combat" conditions. The semi-automatics require very little maintenance, and can be repaired quickly if some of their parts become damaged.

So, one faces a choice between the sturdy revolver that nearly always works well but requires maintenance and serious repair if it stops working, and the mass consumption semi-automatic which has some quirks, but requires little maintenance and can be repaired quickly if it fails or breaks. The choice is not obvious. Since, however, this feature is most important in affecting the safety of *officers*, not the public, it seems appropriate for their preferences on this matter to be the guide.

3.15 Comfort and Concealability

Finally, the design of the weapon affects the comfort and concealability of the weapons. The key issues here have to do with weight, the overall size of the weapon, and protuberances that can gouge and snag. Here, by all accounts, the Glock semi-automatic has the advantage over the .38 revolver. The weapon is lighter, smaller, and sleeker, therefore much more comfortable to carry.

3.16 Summary

On balance, then, the semi-automatic seems to be the superior weapon. It is probably no more unsafe than the .38 revolver, holds more ammunition, is easier to re-load, more accurate in use, more reliable and easier to maintain, and more comfortable to carry. From the perspective of the police officers, it is easy to see why the weapon is preferred.

From the perspective of the community, however, there might be less enthusiasm. The reason is that it is hard to overcome fears that the automatics will be more likely to accidentally discharge, and that the superior magazine capacity and easy in firing might result in more shots being fired in any given situation, and that would increase the chance of a fatal shooting, or the wounding of innocent bystanders. In effect, some of the features that make the officers feel safer make the community feel less secure.

There is relatively little empirical experience to rely on yet in judging whether the fears of the community are justified or not. Moreover, there are many reasons to suppose that the most important factors affecting the likelihood of accidental shootings, or excessive firing that risks both offenders and bystanders, are not the technical features of the weapons, but the situations that officers are likely to encounter, and the training they receive. These observations suggest that if it seems advisable generally to shift to the Glock, it would be desirable to do so on a phased, experimental basis; and to make increased investments in training to be sure that the increased capabilities of the weapons are properly exploited rather than have them become a threat to the officers and others.

3.2. The Ammunition

The public discussion has also focused to some degree on the ammunition to be used in the weapons. *The New York Times*, for example, in opposing the use of the Glock semi-automatics for the New York Transit Authority Police, worried about the increased

"penetrating" power of the semi-automatic, or the use of "soft dum-dum bullets" in the weapons.⁴

What makes this discussion frustrating to gun experts, however, is that there is nothing intrinsic to the weapon that requires particular kinds of ammunition. What makes ammunition more or less "penetrating" is not the circumference of the pistol barrel.

What makes ammunition more or less powerful and penetrating has to do with the weight of the bullet, the ammunition load, and any other special features of the bullet (such as its shape and coating). One can make semi-automatic bullets that have greater impact or penetration power than revolver bullets and vice versa.

The HUPD has used a 158 gram lead round in the Smith & Wesson revolvers. This ammunition is standard for .38 caliber revolvers. However, if the Department decides to switch to the Glock semi-automatics it will no longer be able to use lead rounds which do not have a metal coating. The two basic types of ammunition which can be used in semi-automatic pistols are round nosed full metal jacket bullets or controlled expansion rounds (sometimes referred to as jacketed hollow point). "Jacketed" means that the shell has a metal sheathing or coating around the lead body of the bullet. All semi-automatics must use some form of jacketed ammunition because the jacket protects the lead bullet from being distorted by the gas pressure of automatic reloading.

Full metal jacket shells are completely encased within a metal sheathing. The complete casing around the shells gives them greater penetration through an object than controlled expansion rounds. By contrast controlled expansion rounds are designed to expand upon

⁴"The Transit Cops' Dum-Dum Arms Race," *The New York Times*, August 11, 1990.

impact with a target and thus slow down inside the target. The controlled expansion of the shell is intended to have greater "stopping power" than full metal jacket rounds because the expansion of the hollow point drags on or tears into the body. A crude analogy for comparing the two ammunition types would be a knife and a hammer: one enters the target more cleanly and deeply while the other penetrates less but with greater impact. Both the controlled expansion and the full metal jacket ammunition can be used in the Glock semi-automatic pistols.

For the HUPD to render a decision about which type of ammunition to choose a number of factors should be considered: officer safety, necessary power to apprehend the targeted offender, and safety of bystanders. The cleaner wounds caused by full metal jacket ammunition has lead many to conclude that they are more humane to the criminal as an apprehension device. However, full metal jacket shells penetrate the bodily more easily and therefore may expose bystanders to increased risk from bullets passing through the body and inadvertently striking a second target. The decreased stopping power of full metal jacket rounds also may place police officers at some disadvantage in terms of apprehending offenders.

By contrast, controlled expansion rounds may cause greater damage to the intended target because of the expansion of the bullet inside the target's body. The media controversy surrounding hollow point shells such as the Black Talon has focused on the more severe wounds left by these bullets. For a police department, however, the greater concern is perhaps the protection of the community and officers themselves. In this regard, many police officers argue that the controlled expansion rounds ensure greater safety for bystanders due to the

decreased likelihood of stray bullets. Some would argue that the safety of the community and its police officers should take priority over the risk of wounding an offender more severely.

The choice between the two types of ammunition is not a simple one for neither is really an ideal apprehension mechanism--the perfect ammunition would stop an offender while harming no one, officer, bystander or even offender. The Committee recognizes that the HUPD must make its selection given the limitations inherent in guns and ammunition--that these devices are dangerous but deemed necessary to provide for the safety of the community. Returning to the central purpose of the Committee's report, what weapon HUPD chooses is essentially a separate question from which ammunition it chooses. The ammunition for the pistols, like the trigger pulls, can be selected to suit user specifications for whichever firearm the Department decides to use.

4.0. Technical Issues: The Value of the Weapons in Use

Guns and ammunition are simply pieces of equipment. They have specific technical characteristics, and those characteristics may facilitate some uses of the weapons and hinder others. But ultimately, the value of the weapons in use depends on how they are fitted into a particular social and organizational environment. Part of that environment could be described as the "task environment": the particular challenges that officers of the HUPD department face, and the value of particular weapons in facing that set of challenges. Another part of that environment could be called the "organizational environment": the set of policies and procedures set out by the HUPD governing the use of weapons, the training that the officers

receive, and the practices that have grown up in the department guided by the rules and the training. It is these things, taken together, that determine the overall value of any particular weapon.

4.1. The Task Environment

A threshold question in deciding whether a shift to the semi-automatic is appropriate or not is whether such a change is necessitated by the tasks now facing the HUPD. One way to think about this, of course, is to see a huge difference in the characteristics of the .38 revolver and the .40 semi-automatic handgun (particularly on the dimension of "firepower"), and then to try to judge whether the world has changed in ways that make the characteristics of the .40 Caliber semi-automatic particularly valuable (for example, that the world has gotten much more dangerous). A different way to think about this, however, is to see relatively small differences in the characteristics of the weapons (principally having to do with accuracy, reliability, and comfort), and therefore to have the choice between the weapons be decided much more in terms of officers' preferences rather than major changes in the world. To a degree, the HUPD has argued for the change in both ways.

4.11 Increased Dangerousness and Firepower

On one hand, they have argued that the world they confront has become increasingly dangerous. This is true for several reasons. First, in their view, the environment surrounding the Harvard Campus has become more dangerous, particularly in the Medical School area, but also in Cambridge. HUPD statistics on crime rates in the campus areas do not obviously

support this view, but statistics only provide part of the picture of the tasks officers face on the job.

Second, the HUPD claims to face increasingly demanding tasks in protecting the Harvard university community on the campus. International terrorism does threaten some activities and people carried out at Harvard, and the HUPD must be prepared to meet these threats. For example from 1991 to 1992 the number of visits by dignitaries or other events requiring special security rose 22%, and thus increased the number of officers needed by more than 20%.⁵

Third, the HUPD is frequently drawn into coordinated operations to support other local police organizations. They have supported local police in responding to calls concerning attacks on police, in pursuits of suspects, and in investigations and arrests. In 1992, the HUPD participated in more than 700 operations in conjunction with other law enforcement agencies. From 1989 to 1992, the number of such coordinated operations done jointly with the Boston Police Department increased by more than 100%.⁶

These three factors taken together make the world that HUPD officers face potentially more dangerous. This naturally makes them want more effective weapons to guarantee their security.

There are many problems with this argument, however. The first is that, although the threats might be there, they have not yet materialized. Nobody in the Harvard University

⁵HUPD Statistics.

⁶HUPD Statistics.

Police Department has been in a situation where they have been forced to fire their weapons in the last 10 years.

Moreover, it is by no means clear that the university community *wants* the HUPD drawn into the operational world that the Boston or Cambridge Police Departments face. Instead of trying to support them in their work, it might be better to keep them focused on the different security problems facing the University.

Finally, if there is a real concern that the officers face major threats in some limited circumstances, one could always respond by authorizing them to have access to long-guns or shot-guns for limited purposes and limited occasions. Arguably, that would provide more security than a semi-automatic pistol.

So, if the decision rested solely on the need to equip officers to deal with a menace, it would not be a strong case.

4.12. Increased Performance and Comfort

To us, however, it seems that the case is easier to make on other grounds. At the technical level, the weapons are not all that different. Probably, the semi-automatic is superior in most of the important respects -- accuracy, safety and comfort. The officers want it. All other things being equal, the community would like to ensure that its officers feel valued, respected, and secure.

So, one can decide to make the shift not because the world of the HUPD has gotten increasingly dangerous, but because the gun is a superior weapon, and the officers want it. This might be a better basis for deciding the matter precisely because it is not predicated on

believing that the world has gotten scarier, nor that it is right for the HUPD to be drawn into the operational world of its neighboring municipal police departments, and giving encouragement to those perspectives.

4.2 Organizational Environment

Whatever tasks the HUPD now faces in its role as a university police department or as an operational support to local municipal police departments, the ultimate value of the weapons depends on how officers use the weapons as well as the circumstances they encounter. A powerful weapon can provide safety to officers, and no threat to bystanders if they are used properly; a less powerful weapon can fail to protect officers and be dangerous to bystanders if they are used improperly. Thus, much depends on the organizational environment within which the weapons are fitted: the policies and procedures that regulate the use of weapons, the training that the officers go through, and the practices that have developed.

A review of the Department's policies and procedures regulating the use of weapons shows that they are appropriate and adequate. Weapons are to be used only in the "most highly extraordinary of circumstances," only when there exists "an immediate threat to the officer or others," and never when there exists "substantial danger to bystanders." The Department's policies also outline specific requirements for the training of officers and the maintenance of weapon conditions.⁷

A review of the Department's current practices with respect to the use of weapons also reveals appropriate discipline. Officers have rarely lost their weapons, or had them fail

⁷HUPD Regulations on the Use of Deadly Force.

inspection. They are rarely unholstered, and, as mentioned earlier, have not been fired in the last ten years. This is due to the task environment the HUPD faces, but also the fact that the officers are well trained in and accustomed to using other means of self-defense and control of arrested suspects. (All officers undergo 16-18 weeks of standard police training.)

Probably the most important feature of the organizational environment is the frequency and character of training that officers receive. Concerning this issue the argument for shifting to the semi-automatic is very strong for two reasons. First, it is clear that performance with the Glock improves significantly with training, and improves more and faster with the Glock than with the revolver. Second, increasingly, as the local police departments shift to the semi-automatic, training has become more inexpensive and more commonly available. If the HUPD stays with the .38 Caliber revolver, training will be harder to find and more expensive to acquire. Since, on balance, training is probably more important in improving safety of the weapons to officers and bystanders than the technical features of the weapon, increased access to training is a key consideration.

Indeed, since the community will undoubtedly want additional training to deal with the apparently greater risk of the .40 Caliber semi-automatic, and since all officers will have to be newly trained on this weapon, it will be important to plan for a particularly high and intensive level of training in weapons use over the next several years if the Department makes the shift to the Glock.

5.0. Symbolic Issues

Probably the most difficult issues to deal with are the symbolic ones. On the one hand, there may be members of the Harvard community who hate the whole idea of guns and an armed university police force. They may also dislike the idea of pandering to exaggerated fears of violence in the surrounding community, and encouraging the HUPD to think that they face a frightening world shoulder to shoulder with colleagues from the local municipal police departments. They may resist the shift to the .40 Caliber semi-automatic weapon because the images of increased danger to be confronted by increased firepower is a dangerous way to think about the world, and an effective response to it.

On the other hand, there may be members of the HUPD who see the shift as vital to their personal security, and important to their professional lives as police officers. They may also see the reluctance of the university community to grant them permission to use the weapons as a sign of the community's indifference to their safety, and inability to recognize their developing professionalism.

Given these views, it would be possible for the decision about whether to shift to the semi-automatic to escalate into an emotional struggle. Rather than let this occur, it seems important that the decision be placed in an appropriate context: one that accurately sees the technical differences between the two weapons as relatively small, and virtually all in favor of the .40 Caliber semi-automatic; that acknowledges that training in the use of weapons is probably much more important in determining whether the weapons will be used safely and appropriately than the technical features of the weapon; and that keeps the central mission of

the HUPD to promote the security of the university community rather than to join a larger metropolitan police force properly in view.

6.0. Recommendations

Given these considerations, the Committee recommends that the University grant permission to the HUPD to shift to the use of the automatic subject to three conditions.

First, the process should be a phased process to allow for learning about the real operational capabilities of the guns. During this time, officers' attitudes toward the weapons and patterns of use should be closely monitored to be sure that the predicted characteristics of the weapons in use are the real ones. One-third of the force should make the shift in AY 92-93. One-third in the next academic year. And one-third in the subsequent year. A report should be filed by the HUPD in September 1994, and September 1995 on what the experience of the Department with the guns has been.

Second, weapons training should be increased. This is necessary partly to re-train officers in the use of the Glock semi-automatic. But the Committee thinks increased training is desirable in any case to increase the officers and the community's confidence in the new weapons.

Third, the HUPD should develop some additional plans for restoring relationships and reducing fears in the university community. This should include a survey of the concerns that the community has, and their views of the HUPD. It could include increased walking patrols. Or, it could include increased self-defense and security classes. Or, increased efforts to identify

and solve problems. In short, the HUPD should join the movement towards "community problem-solving" as an approach to policing.

The main reason that we make these recommendations are:

- 1) It seems to us that the .40 Caliber semi-automatic is a superior weapon both from the perspective of the police and the community;
- 2) The proper response to concerns about the potential for accidents and errors in using the weapons is improved training, not denying officers something that they value and seems objectively valuable;
- 3) Increasingly, training will be available more frequently and conveniently for the .40 Caliber semi-automatic rather than the .38 Caliber revolver.

We remain unclear about whether the operational environment faced by the HUPD has become much more threatening in ways that would be effectively countered by the increased "firepower" of the .40 semi-automatic. We understand that this, along with the desire to keep up with professional standards, constitute some of the principal reasons why the HUPD wishes to have these weapons. But we think that it is important that the HUPD remain focused on the security problems that concern the university community, rather than the ones that challenge the department's professionalism. We do not wish to encourage the Department to join any local "war against crime"; we *do* want the officers to feel safe, valued, and professionally respected, because they are.